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Ovariectomy: laparotomy versus laparoscopy?

Jolle Kirpensteijn
DVM, PhD, Dipl ECVS, Utrecht, Olanda

Indications

Routine endoscopic surgical procedures have been developed and have become the standard in the treatment of many human disease processes. Companion animal endoscopic surgery is slowly progressing and often remains in an experimental phase. Celioscopic ovariectomy (celOVE) is the most common endoscopic procedure performed at the major veterinary institutions and gains more popularity in local veterinary practice. CelOVE has the advantage that it is minimally invasive and that it allows a perfect visualization of the genitourinary tract. Additionally, a fast abdominal exploratory is possible on every patient before closure. Laparoscopic surgery is a additionally perfect tool to teach veterinary students the normal anatomy of the canine abdomen and augments the understanding of the ovariectomy technique.

Surgical technique

The abdomen is approached through three portals inserted in the midline of the abdomen. The exact location of the 10 mm caudal portal is in between the pubis and the umbilicus, the middle 5 mm portal is located just behind the umbilicus and the cranial 5 mm portal just cranial to the umbilicus. The most caudal portal is inserted using the open pediatric technique. After trocar insertion, the proper location of the portal is checked and the abdomen is insufflated with CO2 to an intra-abdominal pressure of 8 mm Hg. The two other trocars and portals are inserted under endoscopic guidance.

With a 5 mm 0 degree optic the abdomen is inspected through the middle portal and two grasping forceps are used to locate and mobilize the left bursa ovarica. A bipolar electrocoagulation forceps is used to coagulate the proper and suspensory ligaments. After sharp dissection of these ligaments the ovarian pedicle is coagulated and severed. The ovary is placed to the right of the bladder and the procedure is repeated for the right ovary. Both ovaries are removed gently through the most caudal portal. The CO2 is evacuated and the incisions are closed routinely.

Results

Four studies were recently performed at Utrecht University. The first study evaluated the effect of using monopolar (MEC) or bipolar electrocoagulation (BEC) on surgical time variables during celOVE in a prospective, non-randomized clinical trial in 103 dogs. Mean surgical time was 47 minutes (range, 27 - 110 min). With BEC, surgical time was significantly shorter (41 minutes; P <.001) than with MEC (53 minutes). Obesity (P <.001) and intraoperative mesovarial bleeding (P =.03) increased surgical time. BEC decreased laparoscopic ovariectomy time, decreased intraoperative hemorrhage, and with the technique used, facilitated exteriorization of the ovaries.

The effect of neuromuscular blockade (NMB) was tested in study II, a prospective, double-blinded, randomized clinical trial. Laparoscopic ovariectomy was performed in forty female dogs with bipolar electrocoagulation by one surgeon using a standard protocol, in which one ovary was removed under NMB, and the other without NMB. With NMB, mean duration of surgical excision of the ovary (5.7 ± 2.3 minutes) was not significantly changed compared to the situation without NMB (5.9 ± 1.9 minutes). Arterial blood pressure (both mean and diastolic) was the only parameter that changed (a mean decrease of 5%) significantly under NMB. The use of NMB as a standard part of the anaesthetic protocol in canine laparoscopic ovariectomy can not be recommended.

The use of a Nd:YAG surgical laser for laparoscopic ovariectomy in dogs was investigated in study III through comparison with laparoscopic bipolar electro-surgery. Laser-surgery resulted in a higher occurrence of intra-operative mesovarial bleeding and caused a 2 minute delay for transection of the left ovary compared to bipolar electro-surgery. Therefore it was concluded that bipolar electro-surgery is still the method of choice for laparoscopic ovariectomy, also considering investments and safety-precautions accompanying the use of a surgical laser.

In study IV, 14 DSH cats received celOVE using paediatric coeloscopic equipment, a Nd:YAG laser with Ø 600 m flexible optical fiber and bipolar electrocoagulation forceps. Overall surgery duration was 30.0 ± 5.6 min and duration of laserOVE (4.1 ± 2.5 min) was significantly increased compared to becOVE (2.2 ± 1.0 min). Both methods were successful and without complications, but the right ovary was more difficult to access, however. Both ovaries were easy to manipulate because of the relatively long suspensory ligament. The ovarian ligaments contained minimal amounts of fat and thus in contrast to celOVE in dogs obesity did not influence surgery duration. Convalescence period was short (0.9 ± 0.4 days) and owner satisfaction high.
Pitfalls

LapOVE can be performed rapidly and with a smaller incision than required for conventional OVE, but requires expensive equipment and a brief interval of training to use the equipment properly. The abovementioned studies showed a rapid postoperative recovery and wound healing for both dogs and cats which is highly appreciated by dog owners. Surgery times and complications, such as incontinence and wound swelling are comparable to OVE per laparotomy. Bipolar coagulation decreases the overall surgery time and the times to resect the individual ovaria. Also, coagulation of peroperative bleeders is facilitated by the bipolar technique.

References


Address for correspondence:
Jolle Kirpensteijn
Department of Clinical Sciences of Companion Animals
Utrecht University, Faculty of Veterinary Medicine
Utrecht, The Netherlands